Assessment of Grafton Economy in the aftermath of the Great Recession

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Grafton County is one of the northern counties in New Hampshire. Unlike its neighboring counties in the northern New Hampshire, it has seen a remarkable economic growth in recent years. In fact, it has grown faster than any other county in the state since 2001, posting the personal income growth of more than 45%; this is more than 10% higher than the runner up Merrimack County. As a result, its per capita personal income surpassed the state average for the first time as a northern rural county, ranking as the third highest per capital personal income county in the state after Rockingham and Hillsborough. However, the Great Recession, which devastated the country during the period of 2007-2009, brought hardships to the various fronts of the county's economy as well. The annual growth rate of county's personal income fell sharply from its peak of 11% in 2006 to about 3% in 2008. Thus, a reassessment of the county's economy is needed for a new development strategy. It is to help identify declining, growing, and emerging industries in the county in the aftermath of the Great Recession.

The analysis found that education and health services is the largest super sector in the county making up more than 30% of the total county jobs and is growing rapidly; manufacturing sector has been in decline but still hires almost 10% of the county's workforce. Given the size of the industry's presence in the county, an exit strategy is required, or a new direction for the industry should be sought at the county leadership levels. A rapidly growing but still underdeveloped sector is professional and business services. This is a sector that has potential to absorb losses in the manufacturing sector, along with the dominant educational and health care services. The economic development and planning communities should ensure the allocation of scarce resource so as to enhance the growth of this sector.

The study is conducted for the period of 2002-2009. The period is carefully chosen so that its analysis is not sensitive to business cycles. The year of 2002 is selected for the beginning year because it is the end of the 2001 recession. For the same reason, 2009 is chosen for the end year, as well as being the latest year for which data is available. Considering the severity of the Great Recession, the selection of the study period should generate a conservative estimate.

The jobs data comes from the Quarterly Census of Employment and Wages (QCEW). It is collected from all establishments that are subject to the federal and state unemployment insurance laws. Firms are required by law to report the monthly employment to the state. Thus, it is population counts as opposed to sample estimates such as the Bureau of Labor Statistics' monthly report on non-farm payrolls and unemployment rate. The data is available at fine industry levels based on six-digit North American Industry Classification System (NAICS). At the sparse rural county level, however, observations are often subject to the BLS's non-disclosure rule and not available at finer levels. For this reason, this report is conducted for three-digit NAICS level (four-digit level when possible).

Location Quotient

Economic development theory categorizes the economy into two broad sectors – basic and non-basic sector. Non-basic sectors produce goods and services for the local consumption, while basic sector for exports. And it is these basic sectors that drive the region's economic growth by bringing incomes from outside the region. The growth of basic sectors not only increases jobs and earnings within its own sectors but also in other non-basic sectors in the region. This is because the workers in basic sectors spend their incomes in other sectors. Traditionally, basic sectors include manufacturing, many services industries and tourism. Location quotient (LQ) is a measure often used to identify the basic sectors. It is an industry's share of the total employment (or any other economic variables) relative to the same industry's share of the total in the larger reference area. A value of LQ larger than 1 indicates that an industry employs more workers relative to the same industry in the reference area after controlling for the size of compared economies. More workers means greater production assuming constant productivity, which is an indication that it is a basic industry exporting to other regions and bring in incomes from outside the region, thus supporting the region's economic development.

The state of New Hampshire is selected for the reference area, instead of the U.S. economy. It is because many industries in the county are believed to interact with other regions in the state to a greater extent than with the entire country. Though, it is true that major sectors in the county such as educational service and health care, and leisure and hospitality may do businesses with many other New England states. At any rates, analyses show that the values of LQ aren't sensitive to the selection of the reference area.

Shift share analysis

This study reports changes in employment by industries during the period of 2002-2009. The traditional shift share analysis is conducted to decompose sources of inter-temporal changes into national share (NS), industry mix (IM), and regional competitiveness (RC). NS is the change in employment the region's industry that would have occurred if the region's industry had grown at the growth rate of the reference area's total employment. The idea is that how much of an employment change in an industry has to do with the general employment trend. IM is the change in employment the region's industry would have seen if it had grown at the rate the same industry in the reference area had grown relative to the reference area's total employment. The idea is that how much of the employment change in the region's industry has to do with the trend in the industry. RC is the employment change in the region's industry that has to do with region's competitiveness in the region. It is the industry's growth rate in the region relative to the same industry's growth rate in the larger reference area. Higher growth rate of the region's industry relative to the same industry in the larger reference area may indicate the degree of the region's competitiveness in the industry. Like in the case of LQ, a caveat in this interpretation is that it assumes constant productivity. Higher employment growth may be a reflection of either increasing output or lagging labor productivity.

NAICS	Description	Employment	Share in total	% change	Impact Index	LQ
10	Total, all industries	44,643	86.9%	2.9%	2.53	1.0
62	Health Care and Social Assistance	10,657	20.7%	23.5%	4.88	1.5
44-45	Retail Trade	7,781	15.1%	6.7%	1.01	1.0
61	Educational Services	5,779	11.2%	6.1%	0.69	3.9
72	Accommodation and Food Services	4,789	9.3%	1.3%	0.12	1.1
31-33	Manufacturing	4,726	9.2%	(19.0%)	(1.75)	0.8
54	Professional, Scientific, and Technical Services	1,574	3.1%	21.0%	0.64	0.6
23	Construction	1,475	2.9%	(14.2%)	(0.41)	0.8
81	Other Services (except Public Administration)	1,242	2.4%	(6.7%)	(0.16)	0.8
51	Information	1,128	2.2%	(8.3%)	(0.18)	1.1
71	Arts, Entertainment, and Recreation	1,117	2.2%	(15.5%)	(0.34)	1.2
42	Wholesale Trade	905	1.8%	0.6%	0.01	0.4
52	Finance and Insurance	896	1.7%	1.6%	0.03	0.4
56	Administrative and Support and Waste Management and Remediation Services	793	1.5%	0.5%	0.01	0.4
48-49	Transportation and Warehousing	513	1.0%	(5.2%)	(0.05)	0.5
53	Real Estate and Rental and Leasing	475	0.9%	(26.8%)	(0.25)	0.8
55	Management of Companies and Enterprises	404	0.8%	(13.1%)	(0.10)	0.6
11	Agriculture, Forestry, Fishing and Hunting	198	0.4%	9.4%	0.04	1.3
22	Utilities	137	0.3%	26.9%	0.07	0.6
21	Mining, Quarrying, and Oil and Gas Extraction	50	0.1%	85.2%	0.08	1.2
99	Unclassified	4	0.0%	(42.9%)	(0.00)	1.2

- County's primary sectors
  - The County's economy largely depends on the following four sectors – health care and social assistance, retail trade, educational services, and accommodation and food services.
- Growing and declining sectors
  - The top five growing sectors are Mining, Quarrying, and Oil and Gas Extraction, Utilities, Health Care and Social Assistance, Professional, Scientific, and Technical Services, and Agriculture, Forestry, Fishing and Hunting.
  - The top five declining sectors are Real Estate and Rental and Leasing, Manufacturing, Accommodation and Food Services, Construction, and Management of Companies and Enterprises.
- Noticeable sectors
  - Manufacturing, which makes up nearly 10 % of the county's employment in 2009, declined nearly 20% during the period of 2002-2009.
  - On a positive note, health care and social assistance sector, which is the largest private sector in the county making up more than 20% of the county's employment in 2009, grew at a remarkable rate of 24%.
  - A sector that is still small but rapidly growing is Professional, Scientific, and Technical Services, and Educational Services. It is the sixth largest sector making up about 3% of the total employment in 2009. But it grew

at an amazing rate of more than 20% during the study period. It has a chance to become a major player for the county's economy in the coming years.

- Exporting sectors (LQ higher than 1)
    - The top five exporting sectors are educational services, health care and social assistance, agriculture, forestry, fishing, and hunting, Mining, Quarrying, and Oil and Gas Extraction, and Arts, Entertainment, and Recreation.
    - All these exporting sectors expanded during the period of 2002-2009, except for Arts, Entertainment, and Recreation.

Health Care and Social Assistance

Snapshot of the sector

It is the largest employer in the county in 2009, employing more than 20% of the county's workforce. It is also one of the fastest growing sectors in the county with the growth rate of 23.5% during the period of 2002-2009. No doubt that this is the sector that will have the greatest impact on the county's employment picture in the coming years.

NAICS	Description	employment	share in total	% change	National Share	Industry Share	Regional Share	Total Shift	Impact Index	LQ
62	Health Care and Social Assistance	10,657	20.7%	23.5%	25	1,634	372	2,031	4.88	1.5
622	Hospitals	5,897	11.5%	24.6%	14	1,172	(23)	1,163	2.82	2.5
621	Ambulatory Health Care Services	3,157	6.1%	29.9%	7	381	339	727	1.84	1.3
623	Nursing and Residential Care Facilities	1,017	2.0%	12.9%	3	201	(88)	116	0.25	0.8
624	Social Assistance	586	1.1%	4.3%	2	62	(39)	24	0.05	0.6

- Noteworthy points
  - The two largest industries are Hospitals (622) and Ambulatory Health Care Services (621).
  - These two largest are also the ones that saw the highest growth rate in the sector.
  - These two largest are also basic industries.
  - However, the growth in the sector is largely due to the upward trend in the health care sector in the state, rather than a regional competitive advantage. Refer to the column of regional share. It may be an indication that **the county's largest health care industries lack competitive edge over** the same industries in the state.
  - One industry that grew faster than its counterpart in the state is Ambulatory Health Care Services (621).

Manufacturing

Snapshot of the sector

It is one industry that's in decline among the county's top five largest employing sectors. Its employment contracted by nearly 20% during the period of 2002-2009. Despite the contraction, however, it still employs nearly 10% of the county's workforce. An appropriate development strategy should be in place to minimize its negative impact.

NAICS	Description	Employment	Share in Total	% change	National Share	Industry Share	Regional Share	Total Shift	Impact Index	LQ
31-33	Manufacturing	4,726	9.2%	(19.0%)	17	(1,170)	44	(1,109)	(1.75)	0.8
333	Machinery Manufacturing	1,090	2.1%	9.1%	3	8	80	91	0.19	1.7
332	Fabricated Metal Product Manufacturing	966	1.9%	7.3%	3	(79)	142	66	0.14	1.1
335	Electrical Equipment, Appliance, and Component Manufacturing	672	1.3%	(13.5%)	2	(178)	70	(105)	(0.18)	1.9
323	Printing and Related Support Activities	440	0.9%	(23.1%)	2	(186)	52	(132)	(0.20)	1.8
334	Computer and Electronic Product Manufacturing	387	0.8%	40.7%	1	(55)	166	112	0.31	0.3
321	Wood Product Manufacturing	259	0.5%	(45.1%)	1	(209)	(6)	(213)	(0.23)	1.7
339	Miscellaneous Manufacturing	113	0.2%	(76.1%)	1	(133)	(227)	(359)	(0.17)	0.3
325	Chemical Manufacturing	99	0.2%	(36.9%)	0	(20)	(39)	(58)	(0.07)	0.7
327	Nonmetallic Mineral Product Manufacturing	63	0.1%	(54.0%)	0	(26)	(48)	(74)	(0.07)	0.4
314	Textile Product Mills	21	0.0%	23.5%	0	(3)	7	4	0.01	1.2
311	Food Manufacturing	9	0.0%	(79.1%)	0	(2)	(32)	(34)	(0.01)	0.0

- Noteworthy points
    - The top five largest manufacturing industries are Machinery Manufacturing (333), Fabricated Metal Product Manufacturing (332), Electrical Equipment, Appliance, and Component Manufacturing (335), Printing and Related Support Activities (323), and Computer and Electronic Product Manufacturing (334).
    - All these largest five industries did better than their counterparts in the state. Refer to the column of Regional Share. It may be an indication that **the county's largest manufacturing industries have competitive edge over** the same industries in the state.
    - **The decline in the manufacturing sector, by and large, is due to the general decline in the manufacturing sector in the state.** Refer to the column of the industry share.
    - The top two largest industries expanded in contrast to the general trend in the industry.
    - Computer and Electronic Product Manufacturing (334), growing at a rate of more than 40%, is the fastest growing manufacturing industry in the county.

Retail Trade

Snapshot of the sector

It is the second largest sector in the county after hearth care and social assistance in 2009. Its share in the county's total employment is 15.1%. It saw a modest growth of 6.7% during the period of 2002-2009.

NAICS	Description	Employment	Share in Total	% change	National Share	Industry Share	Regional Share	Total Shift	Impact Index	LQ
44-45	Retail Trade	7,781	15.1%	6.7%	21	(251)	717	488	1.01	1.0
445	Food and Beverage Stores	1,543	3.0%	(10.3%)	5	190	(373)	(178)	(0.31)	0.8
452	General Merchandise Stores	1,499	2.9%	52.2%	3	(6)	517	514	1.52	1.1
454	Nonstore Retailers	907	1.8%	18.7%	2	(57)	197	143	0.33	2.0
444	Building Material and Garden Equipment and Supplies Dealers	759	1.5%	63.2%	1	23	270	294	0.93	1.0
441	Motor Vehicle and Parts Dealers	666	1.3%	(16.0%)	2	(111)	(18)	(127)	(0.21)	0.7
447	Gasoline Stations	499	1.0%	(7.8%)	2	(55)	12	(42)	(0.08)	1.3
451	Sporting Goods, Hobby, Book, and Music Stores	467	0.9%	(6.4%)	1	(61)	28	(32)	(0.06)	1.2
448	Clothing and Clothing Accessories Stores	386	0.8%	(9.0%)	1	31	(70)	(38)	(0.07)	0.6
453	Miscellaneous Store Retailers	374	0.7%	(16.3%)	1	(103)	28	(73)	(0.12)	0.9
446	Health and Personal Care Stores	291	0.6%	11.5%	1	(7)	37	30	0.07	0.8
442	Furniture and Home Furnishings Stores	207	0.4%	(26.9%)	1	(88)	11	(76)	(0.11)	1.1
443	Electronics and Appliance Stores	184	0.4%	68.8%	0	(9)	84	75	0.25	0.7

- Noteworthy points
  - The largest industry is Food and Beverage Stores and it is contracting.
  - The second largest industry is General Merchandize Stores and it is expanding rapidly. Detailed data shows that a major type in this industry category is Department Stores (except Discount Department Stores).
  - Like in the case of manufacturing, **the decline in many industries in this sector may be attributed to the general downward trend in the retail industry in the state.** Refer to the Column of Industry Share.
  - The good news is that the retail sector, by and large, did better than their counterparts in the state. Refer to the column of regional share. It may be an indication that **the county's retail industries have competitive edge over** the same industries in the state.

Educational Services

Snapshot of the sector

It is the third largest sector in the county in 2009. Its share in the county's total employment is about 11%. It saw a modest growth of about 6% during the period of 2002-2009.

NAICS	Description	Employment	Share in Total	% change	National Share	Industry Share	Regional Share	Total Shift	Impact Index	LQ
61	Educational Services	5,779	11.2%	6.1%	16	640	(322)	334	0.69	3.9
611	Educational Services	5,779	11.2%	6.1%	16	640	(322)	334	0.69	3.9

- Noteworthy points
    - Although the data is not disclosed, the primary industries in this sector are Colleges, Universities, and Professional Schools.
    - **The growth in this industry is largely due to the general expansion in the educational sector in the state.** Refer to the column of the industry share.
    - Its location quotient is very high, which indicates that it is a basic industry that drives the region's economic growth.

Professional, Scientific, and Technical Services

Snapshot of the sector

It is a sector that is still underdeveloped but, at the recent growth rate, could become one of the major players in the county's economy. It makes up about 3% of the county's jobs base in 2009. It expanded at a rate of more than 20% during the period of 2002-2009.

NAICS	Description	Employment	Share in Total	% change	National Share	Industry Share	Regional Share	Total Shift	Impact Index	LQ
54	Professional, Scientific, and Technical Services	1,574	3.1%	21.0%	4	205	65	273	0.64	0.6
5417	Scientific Research and Development Services	459	0.9%	146.8%	1	(13)	285	273	1.31	3.7
5413	Architectural, Engineering, and Related Services	231	0.4%	7.4%	1	12	3	16	0.03	0.6
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	217	0.4%	6.4%	1	114	(102)	13	0.03	0.6
5411	Legal Services	197	0.4%	(11.3%)	1	(13)	(12)	(25)	(0.04)	0.5
5415	Computer Systems Design and Related Services	185	0.4%	0.0%	1	56	(57)	0	0.00	0.3
5419	Other Professional, Scientific, and Technical Services	121	0.2%	34.4%	0	24	7	31	0.08	0.5
5416	Management, Scientific, and Technical Consulting Services	107	0.2%	(27.7%)	0	19	(61)	(41)	(0.06)	0.4
5418	Advertising, Public Relations, and Related Services	37	0.1%	54.2%	0	5	8	13	0.04	0.3
5414	Specialized Design Services	21	0.0%	(25.0%)	0	(9)	2	(7)	(0.01)	0.7

- Noteworthy points
  - The remarkable growth of this sector is attributed to the industry of Scientific Research and Development Services, which had grown nearly 150% during the study period.
  - Data at finer industry levels show that Research and Development in Biotechnology is the major player employing 323 out of 459 of jobs in Scientific Research and Development Services.
  - This industry had shown the remarkable growth at the time when its counterpart in the state contracted. Refer to the column of regional share. It may be an indication that **the county's largest manufacturing industries have competitive edge over** the same industries in the state.

- Its location quotient is also very high, which indicates that it is a basic industry that drives the region’s economic growth.